



**Derivatized metallic surfaces, composites of functionalized polymers with such metallic surfaces and processes for formation thereof**

**Description of Technology:** This invention provides for metal surfaces which are derivatized when treated with .alpha.-.omega. bis-functionalized substantially linear aliphatic, including fluoroaliphatic, acids or salts thereof. These derivatized metal surfaces exhibit changes in surface properties. In particular, composites formed from polymers and metallic surfaces derivatized according to a process of the present invention exhibit surprising durability.

**Patent Listing:**

1. **US Patent No. 6,299,983**, Issued on October 9, 2001, "Derivatized metallic surfaces, composites of functionalized polymers with such metallic surfaces and processes for formation thereof"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi/nph-PTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&cd=PTXT&s1=6,299,983.PN.&OS=PN/6,299,983&RS=PN/6,299,983>

**Market Potential:** It is generally known in the art of forming self assembled monolayers of alkane thiols on gold that there is a transition from disordered to ordered molecular monolayers which occurs with increasing chain length (J. Am Chem. Soc., Vol. 109 (12) p. 3559, 1987). Yang et al (J. Am. Chem. Soc., Vol. 115 (25), p. 11855, 1993) teach that the degree of order of the backbone chains in metal alkyl bis(phosphonate) solids increases with chain length approaching a maximum when the chain is at least 11 carbon units long. The relative degree of organization is inferred from the location of CH<sub>2</sub> bond stretches in the infrared spectrum of the material, which is said to shift to lower wavenumber with increasing organization. However, there is no teaching in that art to treat metallic surfaces to achieve improved adhesion of coatings, polymer films, or for improved corrosion resistance.

**Benefits:**

- Improved adhesion of coatings, polymer films, and improved corrosion resistance.

**Applications:**

- Forming monolayers of alkane thiols.

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